**Methods 2 Revision: Algebra**

*There are 2 questions on each skill. If you need help on part (a) try and do part (b) by yourself.*

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| 1 | 1. If a=3 and t=-2 find the value of  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | (i) | (ii) | (iii) | (iv) | (v) | (vi) | | 3a | a2 | 5a2 | 4a – 2t | 2(3a + t) |  |  1. If a=4 and t=-5 find the value of the expressions in (a) | | | | | | 12 |
| 2 | 1. Complete the table for the equation y = 2x2 – 3x  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | x | -2 | -1 | 0 | 1 | 2 | 3 | | y | 14 |  |  |  |  |  |  1. Draw the graph of y = 2x2 – 3x on axes with x from -2 to 3 and y from -2 to 14 2. Use your graph to find the value of y when x = 2.3 3. Use your graph to find the value of y when x = –1.5 4. Use your graph to solve 2x2 – 3x = 5 5. Use your graph to solve 2x2 – 3x = 8 6. Complete the table for the equation y = 2x2 – 3x  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | x | -2 | -1 | 0 | 1 | 2 | | y | 14 |  |  |  |  |  1. Draw the graph of y = 3x2 – x on axes with x from -2 to 2 and y from -2 to 14 2. Use your graph to find the value of y when x = 1.5 3. Use your graph to find the value of y when x = –1.5 4. Use your graph to solve 3x2 – x = 10 | | | | | | 20 |
| 3 | 1. Solve the inequality 2x + 3 < 11 2. Solve the inequality 5x – 7 > 43 | | | | | | 4 |
| 4 | 1. On a copy of this grid, draw straight lines and use shading to show the region **R** that satisfies the inequalities   y ≥ 3, y ≤ 2x + 3, x + y ≤ 6 | | | |  | |  |
|  | 1. On another grid like part (a), draw straight lines and use shading to show the region **R** that satisfies the inequalities   y ≥ 2, y ≤ x + 1, y ≥ 3x – 6 | | | | | | 10 |
| 5 | 1. Solve these two simultaneous equations   2r + 3s = 6  3r – 2s = 22   1. Solve these two simultaneous equations   h + 3t = –10  2h – t = 8 | | | | | | 8 |
| 6 | 1. Use the graph to solve the simultaneous equations   y = 7 – x and y = 2x – 2 | |  | | | |  |
|  | 1. Use the graph to solve the simultaneous equations   y = 8 – 2x and y = ½x + 3 | |  | | | | 4 |
| 7 | ( a) (i)Complete this table of values for  y = x3 + x – 2   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | x | -2 | -1 | 0 | 1 | 2 | | y | -12 |  |  |  |  |   (ii) On a grid like this, draw the graph of  y = x3 + x – 2  (iii) Use the graph to find the value of x when y = 2 | | | | |  | 5 |
|  | ( b) (i)Complete this table of values for  y = x3 - 3x   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | x | -2 | -1 | 0 | 1 | 2 | | y |  |  |  |  |  |   (ii) On a grid like this, draw the graph of  y = x3 - 3x  (iii) Use the graph to find the value of x when y = 1 | | | | |  | 5 |
| 8 | (a) Sketch the graphs of  (i) y = x2 , (ii) y = x3, (iii) y = 2x + 4, (iv) y = -x3  b)Sketch the graphs of  (i) y = -x2, (ii) y = 1/x, (iii) y = 3x – 6, (iv) y = x2 – 4 | | | | | | 8 |
| 9 | 1. Solve 3*x*2 + 7*x* – 12 = 0   Give your solutions correct to 2 decimal places.   1. Solve 2*x*2 – 5*x* + 1 = 0   Give your solutions correct to 2 decimal places. | | |  | | | 8 |
| 10 | 1. Make *x* the subject of   4(*x* – 6) = *y*(4 – 3*x*)   1. Make *x* the subject of the formula | | | | | | 8 |
| 11 | By eliminating *y*, find the solutions to the simultaneous equations  *x*2 + *y*2 = 20  *y* = *x* – 2  By eliminating *y*, find the solutions to the simultaneous equations  *x*2 + *y*2 = 13  *y* = *x* + 1 | | | | | | 12 |
| 12 | (A) The equation of the straight line through A and B is *y* = ⅓*x* + 5  a) Write down the equation of another straight line that is parallel to *y* = ⅓*x* +5  b) Write down the equation of another straight line that passes through the point (0, 5).  c) Find the equation of the line perpendicular to AB passing through B. |  | | | | | 10 |
|  | (B) The equation of the straight line through A and B is *y* = ½*x* + 4  a) Write down the equation of another straight line that is parallel to  *y* = ½*x* + 4  b) Write down the equation of another straight line that passes through the point (0, 4).  c) Find the equation of the line perpendicular to AB passing through B. | | | | |